

KNOWLEDGE OF THE HEALTH TEAM ABOUT BRAIN DEATH PROTOCOL AND MAINTENANCE OF POTENTIAL DONOR

Conhecimento da equipe de saúde sobre protocolo de morte encefálica e manutenção do potencial doador

Conocimiento del equipo de salud sobre el protocolo de muerte cerebral y el mantenimiento de posibles donantes

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ABSTRACT

Objective: to analyze the knowledge of the health team of the adult Intensive Care Unit about brain death protocol and maintenance of potential organ and tissue donors for transplants. **Methods:** cross-sectional, observational, analytical study developed in the adult intensive care unit of a high complexity hospital in northeastern Brazil, from July to September 2019. The sample was of convenience, composed of 22 professionals, nurses, physicians and physiotherapists. **Results:** the majority presented adequate knowledge about the procedures necessary to open the brain death protocol, however, does not know which professionals have competence to open the protocol, does not know when the process of maintaining the potential organ donor, presented a lack of knowledge about their attributions. **Conclusion:** we identified the need for training of the health team interviewed on the brain death protocol, organ and tissue donation, with a focus on maintaining the potential donor.

Descriptors: Health education; Patient care team; Tissue donors; Tissue and organ procurement; Transplantation.

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RESUMO

Objetivo: analisar o conhecimento da equipe de saúde da Unidade de Terapia Intensiva de adulto sobre protocolo de morte encefálica e manutenção do potencial doador de órgãos e tecidos para transplantes.

Método: estudo transversal, observacional, analítico desenvolvido na Unidade de Terapia Intensiva adulto, de um hospital de alta complexidade do Nordeste brasileiro, no período de julho a setembro de 2019. A amostra foi de conveniência, formada por 22 profissionais, enfermeiros, médicos e fisioterapeutas. **Resultados:** a maioria dos entrevistados apresentou conhecimento adequado sobre os procedimentos necessários para abertura do protocolo de morte encefálica, entretanto, não soube informar adequadamente quais profissionais têm competência para abertura do protocolo, desconhece quando deve ser iniciado o processo de manutenção do potencial doador de órgãos e apresentaram déficit de conhecimentos sobre suas atribuições. **Conclusão:** identificamos a necessidade de capacitação da equipe de saúde entrevistada sobre o protocolo de morte encefálica, doação de órgãos e tecidos, com foco na manutenção do potencial doador.

Descritores: Educação em saúde; Equipe de assistência ao paciente; Doadores de tecidos; Obtenção de tecidos e órgãos; Transplante.

RESUMEN

Objetivo: analizar el conocimiento del equipo de salud de la Unidad de Cuidados Intensivos para adultos sobre el protocolo de muerte cerebral y el mantenimiento de posibles donantes de órganos y tejidos para trasplantes. **Métodos:** estudio transversal, observacional y analítico desarrollado en la unidad de cuidados intensivos para adultos de un hospital de alta complejidad en el noreste de Brasil, de julio a septiembre de 2019. La muestra fue de conveniencia, compuesta por 22 profesionales, enfermeras, médicos y fisioterapeutas. **Resultados:** la mayoría presentó conocimientos adecuados sobre los procedimientos necesarios para abrir el protocolo de muerte cerebral, sin embargo, no sabe qué profesionales tienen competencia para abrir el protocolo, consciente de cuándo debe iniciarse el proceso de mantenimiento del donante potencial de órganos, se presentó una falta de conocimiento sobre sus atribuciones.

Conclusión: identificamos la necesidad de capacitación del equipo de salud entrevistado sobre el protocolo de muerte cerebral, donación de órganos y tejidos, centrándose en el mantenimiento del donante potencial.

Palabras Clave: Educación en salud; Grupo de atención al paciente; Donantes de tejidos; Obtención de tejidos y órganos; Trasplante.

INTRODUCTION

Organ and tissue transplantation is a complex process that is currently used as an effective, therapeutic and safe alternative in the treatment of several diseases, increasing life expectancy and acting in rehabilitation in situations such as organ and tissue insufficiency or failure.^{1,2}

In Brazil, transplants began in 1964 in Rio de Janeiro, but only in the 1980s did the first organizations to notify potential donors appear. Before that there were no protocols specifically for the donor, such as hemodynamic maintenance.¹

Currently, according to the legal aspects, the organ donor can be living or deceased, as long as it is among the criteria already established by Law No. 10.211/2001 of the Brazilian legislation, which has as guidelines the gratuity of the donation, the beneficence of the recipients, and non-maleficence in relation to living donors.^{3,4}

The actual donation from the deceased donor occurs through steps that ensure the quality of organs for transplantation purposes, starting with the identification of the potential donor, according to the clinical criteria for (BD)⁽¹⁾ already recommended in Resolution No. 2173/2017 of the Federal Council of Medicine (CFM), followed by the evaluation and maintenance of the potential donor, confirmation of the diagnosis of BD, family interview, and positive response.⁵

Of these steps, the maintenance of the potential donor is the phase that permeates the entire donation-transplant process, starting from the identification of the potential donor until the removal of organs for transplantation purposes. This makes it extremely important, since it will maintain the potential donor's hemodynamic status stable.⁶

Knowledge and quality of the assistance provided by the trained, qualified, and interdisciplinary health team are essential for the maintenance of the potential donor, because after brain death a series of physiological alterations occur in the potential donor that may contribute to the patient's instability, resulting in hypotension, diabetes insipidus, hypothermia, hypernatremia, metabolic acidosis, pulmonary edema, and disseminated intravascular coagulation, besides hyperglycemia, which is aggravated by the administration of glucose-containing substances that may make the donation unfeasible.⁶

The interdisciplinary health team in the Intensive Care Unit (ICU) has a fundamental role in the maintenance of the potential organ and tissue donor, because they provide 24 hours assistance with highly complex care and are the most indicated to provide care, able to monitor and intervene in the potential donor's clinic.⁷

In this context, it is questioned what is the knowledge of the health team of the adult general ICU about the BD Protocol and about the maintenance of the potential donor according to Resolution No. 2.173/2017 of the CFM, since this knowledge is essential for the performance of their duties and may contribute to a better feasibility of effective donations of organs and tissues.

Thus, this study aimed to analyze the knowledge of the health team of the adult Intensive Care Unit on brain death protocol and maintenance of the potential donor of organs and tissues for transplantation.

METHODS

This is a cross-sectional, observational, analytical study with a quantitative approach. It was carried out in the Intensive Care Unit of a quaternary hospital, reference for the treatment of severe burns, exogenous intoxication and trauma victims, located in the city of Recife, capital of the state of Pernambuco.⁸

The population was composed of professionals from the interdisciplinary health team - nurses, physicians and physical therapists - who had been working in the general adult ICU of the hospital for at least one year and who had already assisted the patient with an open BD protocol. The non-probabilistic sample, by convenience was composed

of 22 professionals who were available at the time of research and who met the established selection criteria.

Data were collected, by means of individual interviews, in the period from July to September 2019. A research form, prepared by the authors, based on studies related to the theme, was used, in which sociodemographic and scientific knowledge variables of interest to the study were included.

At the completion of data collection, a review of the data was conducted to verify the possible existence of inconsistencies and/or gaps in the completion of the instruments. After the review, the data were entered into a Microsoft Office Excel 2016 spreadsheet.

The data were analyzed quantitatively using the Statistical Package for the Social Sciences (SPSS) version 20.0, and described in absolute numeric and percentage terms, presented by means of tables.

This study is a subproject of the research project “Factors involved in organ and tissue donation for transplantation”, approved by the Research Ethics Committee (CEP) of the Hospital Universitário Oswaldo Cruz (HUOC), Opinion No. 3.226.552 and by the CEP of the Hospital da Restauração Governador Paulo Guerra (HR), co-participant institution, Opinion No. 3.380.886, being developed in accordance with Resolution No. 466/2012 of the National Health Council of the Ministry of Health, on research involving human beings, where the principles of bioethics were respected, as well as the confidentiality and anonymity of the research participants.⁹

RESULTS

Regarding the characterization of the participants, there was a predominance of females, 20 (91%), the age range 35-45 years was represented by 10 (46%) persons, followed by 25-35 years with six (27%) and over 45 years with five (23%) persons. Most were nurses, 10-20 years of training, maximum degree of specialization, had worked in the ICU between 1-5 years, participated in the opening of the BD protocol, however, had not received courses on the subject of organ donation, Table 1.

Table 1 - Characteristics of the interdisciplinary team of the adult general ICU. Recife, PE, Brazil, 2019.

Variables	N	%
Profession		
Nurse	11	50
Physiotherapist	5	22,7
Doctor	6	27,3
Training time		
1-10 years	8	36,3
10-20 years	10	45,5
20-30 years	2	9,1
> 30 years	2	9,1

Variables	N	%
Maximum Title		
Master's Degree	2	9,0
Residence	5	22,7
Specialization	14	63,6
Undergraduate	1	4,5
Working Time/UTI		
1-5 years	7	31,8
5-10 years	4	18,2
> 10 years	11	50,0
Participation in the opening of the BD protocol		
Yes	17	77,3
No	5	22,7
Participation in courses on organ donation		
Yes	7	31,8
No	15	68,2

Source: Research Project Factors involved in organ and tissue donation for transplantation, 2019.

Regarding the knowledge of the professionals surveyed about the stages of maintenance of the potential donor, we found that most have adequate knowledge about the necessary procedures for opening BD protocol, and recognize the interference of the therapeutic use of CNS depressant medications in the protocol, Table 2.

Among the findings of the physical examination performed by the professionals interviewed and that raise a suspicion of BD, absence of the pupillary and/or cough reflexes were the most cited, being present in the response of 16 (73%) of the professionals.

However, we observed that the majority answered that the minimum time of in-hospital stay for opening of the BD protocol is 24 hours; they don't know which professionals are competent for opening the protocol; and half don't know when the process of maintenance of donor potential should be initiated. Regarding the parameters of blood pressure, oxygen saturation and use of sedative drugs, part of the professionals do not have adequate knowledge for the maintenance of the potential donor, Table 2.

Table 2 - Knowledge of adult general ICU professionals about Brain Death Protocol and maintenance of the potential donor. Recife, PE, Brazil, 2019.

Variables	Nº	%
Minimum hospitalization time for the start of the BD protocol		
6 hours	3	13,6
8 hours	1	4,5
12 hours	4	18,2
24 hours	12	54,5
Did not know how to answer	2	9,1
Professional with competence to open the BD protocol		
Professionals in the fields of intensive care medicine, neurology, neurosurgery, or emergency medicine who are trained	10	45,5
Other	12	54,5
Interference of the therapeutic use of central nervous system depressant medications in the BD protocol		
Yes	20	90,9
No	2	9,1
BD Protocol according to CFM Resolution 2.173/2017		
2 clinical examinations at 1-hour intervals in adults, 1 imaging examination, and the apnea test	17	77,3
Incorrect answers	5	22,7
Start of the Potential Organ Donor maintenance process		
After suspicion of BD	11	50,0
Other (after diagnosis of BD, opening of protocol or contact with CHIDOTT)	11	50,0
Systolic blood pressure in 100mmHg for diagnosis of BD		
Yes	12	54,5
No	10	45,5
Need for sedative drugs after BD		
Sim	3	13,6
Não	19	86,4
Test BD in patient with saturation less than 94%.		
Yes	9	40,9
No	13	59,1

Source: Research Project Factors involved in organ and tissue donation for transplantation, 2019.

Considering the attributions that the professional should perform during the maintenance of the potential donor, Table 3, we verified that most physiotherapists and physicians have adequate knowledge of their functions.

However, we identified that most nurses are unaware of their professional performance.

Table 3 - Actions of professionals in the adult general ICU in the maintenance of the potential donor of organs and tissues for transplantation. Recife, PE, Brazil, 2019

Variables	Nº	%
Description of the professional performance of the category of Nurses		
Life support maintenance, venous access care, mechanical ventilator adaptation, vital signs control, medication administration and general care	4	36,4
Did not know how to answer	7	63,6
Description of the professional performance of the category of Physicians		
Maintenance of intensive support, cardiovascular resuscitation and adjustment of mechanical ventilation, according to the CIHDOTT protocol.	4	66,7
Did not know how to answer	2	33,3
Description of the professional activity of the category of Physiotherapists		
Maintenance of patent airways and balanced arterial blood gases, adjustment of mechanical ventilation.	4	80
Did not know how to answer	1	20

Source: Research Project Factors involved in organ and tissue donation for transplantation, 2019.

DISCUSSION

Maintenance of the potential donor is a set of therapeutic behaviors performed by the interdisciplinary health team that aims to keep the hemodynamic situation of the potential organ donor stable and are performed from the suspicion of BD until the removal of the organ for transplantation⁶, however, we found that half of the professionals in this study believe that the maintenance of the potential organ donor happens only after the opening of the BD protocol, after the diagnosis or even after the family interview, characterizing that these professionals do not know the ideal moment to start the maintenance of the potential donor.

Patients with requirements to be considered a potential organ and tissue donor are those who present a clinical situation that is able to meet the criteria established by Resolution 2,173/2017 for the opening of the BD protocol. In this context, trained professionals are needed to provide effective and quality assistance^{7,10}, however, we found that only 31.8% of professionals participated in courses/lectures on the

subject, resulting in difficulties for the correct maintenance of the potential organ and tissue donor.

According to Resolution 2,173/2017, the minimum hospitalization time for the start of the BD protocol should be 6 hours, with the exception when the primary cause of coma is hypoxic-ischemic encephalopathy.⁵ However, only 13.6% of the interviewees answered correctly about the minimum hospitalization time for opening the protocol, and most believe that the minimum time should be 24 hours, which means that the early detection of patients with criteria for opening the BD protocol may be impaired, resulting in difficulty to complete the steps that ensure the timely viability of organs, which may result in increased loss of potential donors due to cardiac arrest.^{7,11}

About the use of Central Nervous System depressant drugs, we found that most participants responded that there is influence on the BD protocol, however, Resolution 2173/2017 states that when used in usual therapeutic doses, they do not cause a perceptible coma, not interfering in the procedures for BD determination. However, for doses in continuous infusion, it is necessary to suspend the use, as well as wait the time of 4 half-lives before starting the procedures to determine BD, justified by the fact that one should avoid the risk of error related to the diagnosis of BD.⁵

Also according to the CFM, all procedures to determine BD should be initiated in patients who present with nonperceptive coma, absence of supraspinal reactivity, and persistent apnea, and who meet prerequisites such as presence of brain injury of known cause, irreversible and capable of causing BD; absence of spontaneous breathing and brainstem reflexes, in addition, there must be absence of treatable factors that could confuse the diagnosis, in this context all participants cited at least one indication for suspected BD, with the lack of pupillary and cough reflexes being the predominant responses.⁵

The potential donor's body temperature should be higher than 35°C, oxygen saturation should be above 94%, contradicting what 40.9% of the professionals answered, and should present systolic blood pressure greater than or equal to 100 mmHg, confirming what 54, 5% answered about the minimum blood pressure values of the potential organ donor to open the BD protocol⁵, metabolic, acid-base and/or electrolyte disturbances should also be avoided, however, under these conditions, it is up to the team to define if the abnormalities are capable of making the protocol unfeasible.^{12,13}

To close the BD diagnosis, two clinical evaluations are required, performed in a time interval of at least 1 hour for adults, which evaluation should be performed by professionals in the areas of intensive care medicine, neurology, neurosurgery, or emergency medicine who are at least qualified for the diagnosis of BD or have experience in opening this protocol, and these should not be part of organ procurement and/or transplant teams. Thus, it can be seen that only 45.5% of the interviewees answered correctly about the professional who is competent to open the protocol.

Thus, we found a deficit of knowledge of the health team about BD protocol, representing a significant risk to the quality of care focused on maintaining the potential donor of organs and tissues for transplantation.^{7,16}

Maintenance of the potential organ and tissue donor for transplantation is a complex activity that when done inadequately can limit the number of effective donations, as well as the quality of transplanted organs. On the other hand, the health team's knowledge is the instrument for the success and quality of the care provided. Therefore, it is important that each team member knows his/her role in maintaining the donor potential, improving the distribution of activities related to health care, enhancing the viability of donated organs.^{16,17}

In this case, what stands out in this study is that the professionals interviewed have not deepened the attributions of their category, as for example, the nurses category (36.4%) that is recognized only in the maintenance of life support, care with venous access, adaptation to mechanical ventilation and control of vital signs, administration of medications and general care. However, beyond what was described by the interviewees, it is up to the nurse to apply the Systematization of Nursing Care, as well as to plan, execute, coordinate, supervise and evaluate all the procedures of the nursing team, which range from performing methodological procedures such as management to the execution of highly complex technical procedures, pre-established by current legislation.¹⁰

Medical professionals are responsible for diagnosing BD, as well as reviewing protocols, requesting tests and prescribing drugs, electrolytes and blood products according to the potential donor's clinical condition.^{15,18} In this case, it is noticeable that, as well as the other categories, most interviewed professionals (66.7%) did not correctly describe their attributions with the potential donor, describing general care of the profession such as: intensive support, adjustment of mechanical ventilation, maintenance of vital signs and cardiovascular resuscitation.

Last and not least, the category of physiotherapists in the survey (80%) cited as main attributions in the care of the potential organ and tissue donor for transplantation, the maintenance of a patent airway, as well as a balanced arterial blood gas through care in ventilatory parameters and adjustments in mechanical ventilation. However, according to the Federal Council of Physiotherapy, in addition to the care in maintaining a physiological or artificial airway, the physiotherapist is responsible for requesting and interpreting pulmonary function tests, performing measures to prevent and reduce the risk of cardiorespiratory problems, performing lung expansion and secretion removal techniques, in addition to evaluating and monitoring cardiorespiratory parameters.¹⁹

Studies show that few potential donors are excellently handled by the health team^{16,20}. This fact may be due to lack of training of professionals on the BD protocol and on the maintenance of the potential donor. Similarly, we found that 68.2% of the professionals interviewed said they had never participated in courses or lectures on the subject.

Results of this study show the need for training the adult ICU health team of a highly complex hospital in the Northeast of Brazil, on the BD protocol and on organ and tissue donation, focusing on maintenance of the donor potential and to improve the quality of donated organs.^{7,16}

The limitation of this study was based mainly on the unavailability of the healthcare team to participate in the research, because data collection occurred during working hours.

CONCLUSION

The results of this study, from quantitative analysis and sample, does not allow us to expand our conclusions more consistently, however, in relation to health professionals surveyed about BD protocol and maintenance of the potential donor, the findings are similar to what is described in the literature regarding the gaps in knowledge that was acquired in care practice, and that few professionals participated in training on the subject.

This deficit in technical and scientific knowledge about the BD protocol, and also how to act in the maintenance of the potential donor evidenced in this study corroborates the literature and implies in possible failures in the care provided to the potential donor, which may reflect in the number of effective donations. Thus, training of ICU health professionals in the researched hospital stands out as a strategy that may prove effective for the success and quality of care provided to the potential organ and tissue donor.

This study contributed to the knowledge of the weaknesses that permeate the identification of BD and the maintenance of the potential donor, raising reflections on the assistance of the health team, and highlighting that educational interventions, focusing on all stages of the organ donation process, are fundamental, directing further research on this topic.

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